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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/930,530 | 08/14/2001 | John Peterson | | 1712 |

7590 08/20/2002
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EXAMINER

NGUYEN, HUNG

ART UNIT PAPER NUMBER

2851

DATE MAILED: 08/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/930,530

Applicant(s)

PETERSON ET AL.

Examiner

Hung Henry V Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-71 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-71 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Drawings

1. This application, filed under former 37 CFR 1.60, lacks formal drawings. The informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, applicant will be required to submit new formal drawings. In unusual circumstances, the formal drawings from the abandoned parent application may be transferred by the grant of a petition under 37 CFR 1.182.

Claim Objections

2. Claims 11 and 60 are objected to because of the following informalities: As to claim 11, the dependency of the claim can not be determined. As to claim 60, reference to "tot" in line 13, should read --to-- Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6-7, 12, 14-15, 22, 27-28, 32-50, 54, 63, 67-68 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. As to claim 6 (for example), the recitation of "the control system adjusts the second X position signal to be approximately equal to first X position signal" is vague and indefinite. It is not clearly understood how the control system can perform the function as claimed while the

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function of the control system is to receive the positional signal from the measurement system (21) which includes a first X system (100) that provides a first X positional signal and a second (102) X system that provides a second X positional signal.

Claims 14, 22, 27, 34, 44, 54, 63, 67 are rejected as being ambiguous for the same above reason. Please explain.

b. With respect to claim 12, the recitation of “the third Y position signal from the third Y system to control the Y mover after the switch” is not clearly understood. There are a number of switching (operations). It is not clearly understood what “switch(ing)” the application is referring to?

c. As to claim 32, the recitation of “where in the control system does not direct current to the X mover during at least one servo cycle when the device table is in the transition region” is indefinite. It has been held that the recitation that an element does not perform a function is not a positive limitation but only requires the ability to so perform. It does not constitute a limitation in any patentable sense.

d. Regarding claim 38, the limitation in the square bracket such as [during the at least one skipped servo cycle] renders the claim indefinite because it is unclear whether the limitations in the bracket are part of the claimed invention. See MPEP § 2173.05(d).

e. As to claim 39, the recitation of “wherein the control system flushes the history points with one servo cycle” is not clearly understood. Further, “The history points” lacks proper antecedent basis.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

As best the claimed subject matters are understood (see rejection under 35 U.S.C. 112, second paragraph, *supra*). Claims are anticipated by references.

4. Claims 1-8, 16-18, 32-40, 48-50, 60-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebihara et al (U.S.Pat. 6,323,935).

With respect to claims 1-8, 16-18, 32-40, 48-50 and 60-64, Ebihara discloses an stage device (10)/and corresponding method comprising substantially all of the structures as set forth in the instant claims including: a base structure (12) that retains the stage (14); a X driving system (22) connected to the stage and moving the stage along in the X direction; a Y driving system (60,70) for driving the stage along the Y direction; a measurement system (15) for monitoring the stage, the measurement system having a first X system (50X1) for providing a first X position signal and indicating the position of the stage along the X direction when the stage is in the first position; and a second X system (50X2) for providing a second X position signal and indicating the position of the stage along the X direction when the stage is in the second position and a control system (16) for receiving the position signals from the measurement system and directing the appropriate drive signals for moving the stage *as desired* (see fig.1-2, and col.9, lines 45-58). Ebihara does not expressly disclose "the control system

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switches from the first X system to the second X system within one servo cycle in the transition region" or "does not direct current to the X mover during at least one servo cycle" during the transition between the interferometers. Ebihara further teaches a direct servo or indirect servo control system (see col.13, lines 62 through col.14) for controlling the stage mover assembly wherein one servo cycle lasts between 0.1 to 1.0mm (see col.17, lines 5-7 and 33-40) and the stage is moved at constant velocity in the X axis direction "while switching from the first X system to the second X system" (see col.21, lines 6-7); and "controlling the position information IFY, IFX1, IFX2 every 1millisecond from each of the interferometers". In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Ebihara to obtain the invention as specified. It would have been obvious to a skilled artisan to switch between the interferometers within one servo cycle or stop the current to the X or Y mover during one servo cycle for the purpose of improving the accuracy of positioning the stage whereby the accuracy of the exposure apparatus and the quality of the images to be printed is greatly improved.

5. Claims 9-15, 19-30, 41-47, 51-59, 65-71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ebihara et al (U.S.Pat. 6,323,935) in view of Makinouchi et al (U.S.Pat. 6,259,511).

With regard to claims 9-15, 19-30, 41-47, 51-59, 65-71, Ebihara et al discloses an stage device comprising substantially all of the limitations of the instant claims as discussed except for the second and/or third Y systems for monitoring the positions of the device in the Y direction. Makinouchi teaches a stage device having three Y interferometers (14, y1, 14y2 and 23) for monitoring longer stroke of a stage. It would have been obvious to one having ordinary skill in

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the art at the time the invention was made to combine the teachings of Ebihara and Makinouchi to obtain the invention as specified in claims 9-15, 19-30, 41-47, 51-59, 65-71. It would have been obvious to a skilled artisan to employ two or three Y interferometers as taught by Makinouchi into the stage device of Ebihara for monitoring the positions of the stage in the Y direction. It is well known per se that the purpose of doing so would have been to improve the accuracy of positioning of the stage which have a longer stroke between the alignment area and the exposing area.

Prior Art Made of Record

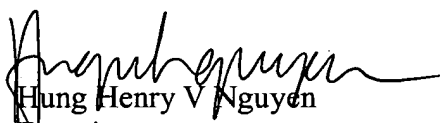
6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ito et al (U.S.Pat. 6,008,882), Tsuchiya et al (U.S.Pat. 6,211,965) and Doran (U.S.Pat. 5,548,195) discloses stage device and method of controlling, each of which comprises substantially all elements as recited in the instant application.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4900.

Hvn 8/17/2002


Hung Henry V Nguyen
Examiner
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